



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. MBHB00,884-H; 500.001)

PATENT FEB 08 2002
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Application of:)
Breaker, et al.) Before the Examiner
Serial No. 09/780,929) Group Art Unit: 1645
Filed: February 8, 2001)
For: NUCLEIC ACID CATALYSTS WITH)
ENDONUCLEASE ACTIVITY)

Assistant Commissioner for Patents
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT

Dear Sir:

Pursuant to the duty of disclosure provided by 37 C.F.R. §1.56 and §§1.97-98, the applicants wish to make the following references of record in the above-identified application. Copies of the references are enclosed. Copies are also listed in the PTO-1449 form enclosed herewith. It is requested that each document cited (including any cited in applicant's specification which is not repeated on the attached Form PTO-1449) be given thorough consideration and that it be cited of record in the prosecution history of the present application by initialing on Form PTO-1449. Such initialing is requested even if the Examiner does not consider a cited document to be sufficiently pertinent to use in a rejection, or otherwise does not consider it to be prior art for any reason, or even if the Examiner does not believe that the guidelines for citation have been fully complied with. This is requested so that each document becomes listed on the face of the patent issuing on the present application.

Portions of the references may be material to the examination of the pending claims, however no such admission is intended. 37 C.F.R. §1.97 (h). The references have not been reviewed in sufficient detail to make any other representation and, in particular, no representation is intended as to the relative importance of any portion of the references. This Statement is not a representation that the cited references have effective dates early enough to be "prior art" within the meaning of 35 U.S.C. §§ 102 or 103.

CITED REFERENCES

U. S. PATENT DOCUMENTS

No.	Document Number								Date	Name	Class	Subclass	Filing Date if Appropriate
1	5	3	3	4	7	1	1	08/02/94	Sproat et al.				
2	5	6	2	4	8	0	3	4/29/97	Noonberg et al.				
3	5	8	5	4	0	3	8	12/29/98	Sullenger et al.				

FOREIGN PATENT DOCUMENTS

No.	Document Number										Date	Country	Translation	
													Yes	No
4	W	O	8	9	0	2	4	3	9	23/03/89	WO/PCT (Arnold et al.)	X		
5	W	O	9	1	0	3	1	6	2	21/03/91	WO/PCT (Rossi et al.)	X		
6	W	O	9	2	0	7	0	6	5	30/04/92	WO/PCT (Eckstein et al.)	X		
7	W	O	9	3	1	5	1	8	7	05/08/93	WO/PCT (Usman et al.)	X		
8	W	O	9	3	2	3	5	6	9	25/11/93	WO/PCT (Draper et al.)	X		
9	W	O	9	4	0	2	5	9	5	03/02/94	WO/PCT (Sullivan et al.)	X		
10	W	O	9	5	0	6	7	3	1	09/03/95	WO/PCT (Usman et al.)	X		
11	W	O	9	5	1	1	9	1	0	04/05/95	WO/PCT (Dudycz et al.)	X		

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12	W	O	9	6	1	0	3	9	0	11/04/96	WO/PCT (Ansell et al.)	
13	W	O	9	6	1	0	3	9	1	11/04/96	WO/PCT (Choi et al.)	
14	W	O	9	6	1	0	3	9	2	11/04/96	WO/PCT (Holland et al.)	
15	W	O	9	6	1	8	7	3	6	20/06/96	WO/PCT (Beigelman et al.)	
16	W	O	9	7	2	6	2	7	0	24/07/97	WO/PCT (Wincott et al.)	
17	W	O	9	8	4	3	9	9	3	08/10/98	WO/PCT (Breaker)	X

OTHER DOCUMENTS - Including Author, Title, Date, Peterinet Pages, Etc.

No.	
18	Bartel and Szostak, "Isolation of New Ribozymes From a Large Pool of Random Sequences," <u>Science</u> 261:1411-1418 (1993)
19	Beaucage and Iyer, "The Functionalization of Oligonucleotides Via Phosphoramidite Derivatives," <u>Tetrahedron</u> 49:1925-1963 (1993)
20	Beaudry and Joyce, "Directed Evolution of an RNA Enzyme," <u>Science</u> 257:635-641 (1992)
21	Beaudry and Joyce, "Minimum Secondary Structure Requirements for Catalytic Activity of a Self-Splicing Group I Intron," <u>Biochemistry</u> 29:6534-5639 (1990)
22	Been et al., "Secondary Structure of the Self-Cleaving RNA of Hepatitis Delta Virus: Applications to Catalytic RNA Design," <u>Biochemistry</u> 31:11843-11852 (1992)
23	Beigelman et al., "Chemical Modification of Hammerhead Ribozymes," <u>J. Biol. Chem.</u> 270:25702-25708 (1995)
24	Beigelman et al., "Synthesis of 1-Deoxy-D-Ribofuranose Phosphoramidite & The Incorporation of Abasic Nucleotides in Stem-Loop II of a Hammerhead Ribozyme," <u>Bioorganic & Medicinal Chemistry Letters</u> 4:1715-1720 (1994)
25	Bellon et al., "Amino-Linked Ribozymes: Post-Synthetic Conjugation of Half-Ribozymes," <u>Nucleosides & Nucleotides</u> 16:951-954 (1997)
26	Bellon et al., "Post-synthetically Ligated Ribozymes: An Alternative Approach to Iterative Solid Phase Synthesis," <u>Bioconjugate Chem.</u> 8:204-212 (1997)
27	Benseler et al., "Hammerhead-like Molecules Containing Non-Nucleoside Linkers Are Active RNA Catalysts," <u>J. Am. Chem. Soc.</u> 115:8483-8484 (1993)
28	Breaker and Joyce, "Inventing and improving ribozyme function: rational design versus iterative selection methods," <u>TIBTECH</u> 12:268-275 (1994)
29	Breaker, "Are engineered proteins getting competition from RNA?" <u>Current Opinion in Biotechnology</u> 7:442-448 (1996)
30	Burgin et al., "Chemically Modified Hammerhead Ribozymes with Improved Catalytic Rates," <u>Biochemistry</u> 35:14090-14097 (1996) (volume no mistakenly listed as 6)
31	Castanotto et al., <u>Methods Enzymol.</u> 313:401-20, 2000
32	Cech, "Ribozyme Engineering," <u>Current Opinion in Structural Biology</u> 2:605-609 (1992)
33	Cech, "Ribozymes and Their Medical Implications," <u>JAMA</u> 260:3030-3034 (1988)
34	Chen et al., "Multitarget-Ribozyme Directed to Cleave at up to Nine Highly Conserved HIV-1 env RNA Regions Inhibits HIV-1 Replication-Potential Effectiveness Against Most Presently Sequenced HIV-1 Isolates," <u>Nucleic Acids Research</u> 20:4581-4589 (1992)
35	Chowrira and Burke, "Extensive Phosphorothioate Substitution Yields Highly Active and Nuclease-Resistant Hairpin Ribozymes," <u>Nucleic Acids Research</u> 20:2835-2840 (1992)
36	Chowrira et al., " <i>In Vitro</i> and <i>in Vivo</i> Comparison of Hammerhead, Hairpin, and Hepatitis Delta Virus Self-Processing Ribozyme Cassettes," <u>J. Biol. Chem.</u> 269:25856-25864 (1994)
37	Christoffersen and Marr, "Ribozymes as Human Therapeutic Agents," <u>J. Med. Chem.</u> 38:2023-2037 (1995) (also referred to as Christofferson and Marr)

38	Cload and Schepartz, "Polyether Tethered Oligonucleotide Probes," <u>J. Am. Chem. Soc.</u> 113:6324-6326 (1991)
39	Couture and Stinchcomb, "Anti-gene therapy: the use of ribozymes to inhibit gene function," <u>Trends In Genetics</u> 12:510-515 (1996)
40	Dropulic et al., "Functional Characterization of a U5 Ribozyme: Intracellular Suppression of Human Immunodeficiency Virus Type I Expression," <u>Journal of Virology</u> 66:1432-1441 (1992)
41	Durand et al., "Circular Dichroism Studies of an Oligodeoxyribonucleotide Containing a Hairpin Loop Made of a Hexaethylene Glycol Chain: Conformation and Stability," <u>Nucleic Acids Research</u> 18:6353-6359 (1990)
42	Elroy-Stein and Moss, "Cytoplasmic Expression System Based on Constitutive Synthesis of Bacteriophage T7 RNA Polymerase in Mammalian Cells," <u>Proc. Natl. Acad. Sci. USA</u> 87:6743-6747 (1990)
43	Fedor and Uhlenbeck, "Kinetics of Intermolecular Cleavage by Hammerhead Ribozymes," <u>Biochemistry</u> 31:12042-12054 (1992)
44	Ferentz and Verdine, "Disulfied Cross-Linked Oligonucleotides," <u>J. Am. Chem. Soc.</u> 113:4000-4002 (1991)
45	Forster and Symons, "Self-Cleavage of Plus and Minus RNAs of a Virusoid and a Structural Model for the Active Sites," <u>Cell</u> 49:211-220 (1987)
46	Freier et al., "Improved free-energy parameters for predictions of RNA duplex stability," <u>Proc. Natl. Acad. Sci. USA</u> 83:9373-9377 (1986)
47	Gao and Huang, "Cytoplasmic Expression of a Reporter Gene by Co-Delivery of T7 RNA Polymerase and T7 Promoter Sequence with Cationic Liposomes," <u>Nucleic Acids Research</u> 21:2867-2872 (1993)
48	Gold et al., "Diversity of Oligonucleotide Functions," <u>Annu. Rev. Biochem.</u> 64:763-797 (1995)
49	Good et al., "Expression of small, therapeutic RNAs in human nuclei," <u>Gene Therapy</u> 4:45-54 (1997)
50	Guo and Collins, "Efficient <i>trans</i> -cleavage of a stem-loop RNA substrate by a ribozyme derived from <i>Neurospora</i> VS RNA," <u>EMBO J.</u> 14:368-376 (1995)
51	Hendry et al., "Using linkers to investigate the spatial separation of the conserved nucleotides A ₉ and G ₁₂ in the Hammerhead Ribozyme," <u>Biochimica et Biophysica Acta</u> 1219:405-412 (1994)
52	Hertel et al., "Numbering System for the Hammerhead," <u>Nucleic Acids Research</u> 20:3252 (1992)
53	Hunziker et al., "Nucleic Acid Analogues: Synthesis and Properties, in Modern Synthetic Methods," <u>VCH</u> , 331-417, 1995
54	Ishiwata et al., "Physical-Chemistry Characteristics and Biodistribution of Poly(ethylene glycol)-Coated Liposomes Using Poly(oxyethylene) Cholesteryl Ether," <u>Chem. Pharm. Bull.</u> 43:1005-1011 (1995) (mistakenly referred to as Ishiwataet)
55	Izant and Weintraub, "Constitutive and Conditional Suppression of Exogenous and Endogeneous Genes by Anti-Sense RNA," <u>Science</u> 229:345-352 (1985)
56	Jaschke et al., "Automated Incorporation of Polyethylene Glycol into Synthetic Oligonucleotides," <u>Tetrahedron Letters</u> 34:301-304 (1993)
57	Jeffries and Symons, "A Catalytic 13-mer Ribozyme," <u>Nucleic Acids Research</u> 17:1371-1377 (1989) (also referred to as Jefferies)
58	Joseph and Burke, "Optimization of an Anti-HIV Hairpin Ribozyme by <i>in Vitro</i> Selection," <u>J. Biol. Chem.</u> 268:24515-24518 (1993)
59	Joyce et al., "Amplification, mutation and selection of catalytic RNA," <u>Gene</u> 82:83-87 (1989)
60	Joyce, "Directed Molecular Evolution," <u>Scientific American</u> 267:90-97 (1992)
61	Kashani-Sabet et al., "Reversal of the Malignant Phenotype by an Anti-ras Ribozyme," <u>Antisense Research & Development</u> 2:3-15 (1992)
62	Kumar and Ellington, "Artificial evolution and natural ribozymes," <u>FASEB J.</u> 9:1183-1195 (1995)
63	Lasic and Needham "The 'Stealth' Liposome: A Prototypical Biomaterial," <u>Chemical Reviews</u> 95:2601-2627 (1995)
64	Lasic and Papahadjopoulos, "Liposomes Revisited," <u>Science</u> 267:1275-1276 (1995)
65	L'Huillier et al., "Cytoplasmic Delivery of Ribozymes Leads to Efficient Reduction in α -Lactalbumin mRNA Levels in C1271 Mouse," <u>EMBO J.</u> 11:4411-4418 (1992)

66	Li and Breaker, "Kinetics of RNA Degradation by Specific Base Catalysis of Transesterification Involving the 2'-Hydroxyl Group" 1999, <i>J. Am. Chem. Soc.</i> , 121, 5364-5372
67	Lieber et al., "Stable High-Level Gene Expression in Mammalian Cells by T7 Phage RNA Polymerase," <i>Methods Enzymol.</i> 217:47-66 (1993)
68	Limbach et al., "Summary: the modified nucleosides of RNA," <i>Nucleic Acids Research</i> 22(12):2183-2196 (1994)
69	Lisziewicz et al., "Inhibition of Human Immunodeficiency Virus Type 1 Replication by Regulated Expression of a Polymeric Tat Activation Response RNA Decoy as a Strategy for Gene Therapy in AIDS," <i>Proc. Natl. Acad. Sci. U.S.A.</i> 90:8000-8004 (1993)
70	Liu et al., "Cationic Liposome-mediated Intravenous Gene Delivery," <i>J. Biol. Chem.</i> 270(42):24864-24870 (1995)
71	Long and Uhlenbeck, "Kinetic characterization of intramolecular and intermolecular hammerhead RNAs with stem II deletions," <i>Proc. Natl. Acad. Sci. USA</i> 91:6977-6981 (1994)
72	Ma et al., "Design and Synthesis of RNA Miniduplexes via a Synthetic Linker Approach," <i>Biochemistry</i> 32:1751-1758 (1993)
73	Ma et al., "Design and Synthesis of RNA Miniduplexes via a Synthetic Linker Approach. 2. Generation of Covalently Closed, Double-Stranded Cyclic HIV-1 TAR RNA Analogs with High Tat-Binding Affinity," <i>Nucleic Acids Research</i> 21:2585-2589 (1993)
74	McCall et al., "Minimal sequence requirements for ribozyme activity," <i>Proc. Natl. Acad. Sci. USA</i> 89:5710-5714 (1992)
75	McCurdy et al., "Deoxyoligonucleotides with Inverted Polarity: Synthesis and Use in Triple-Helix Formation" <i>Nucleosides & Nucleotides</i> 10:287-290 (1991)
76	McGarry and Lindquist, "Inhibition of heat shock protein synthesis by heat-inducible antisense RNA," <i>Proc. Natl. Acad. Sci. USA</i> 83:399-403 (1986)
77	Mesmaeker et al., "Novel Backbone Replacements for Oligonucleotides," <i>American Chemical Society</i> , pp. 24-39 (1994)
78	Michels and Pyle, "Conversion of a Group II Intron into a New Multiple-Turnover Ribozyme that Selectively Cleaves Oligonucleotides: Elucidation of Reaction Mechanism and Structure/Function Relationships," <i>Biochemistry</i> 34:2965-2977 (1995)
79	Milligan and Uhlenbeck, "Synthesis of Small RNAs Using T7 RNA Polymerase," <i>Methods Enzymol.</i> 180:51-62 (1989)
80	Moore and Sharp, "Site-Specific Modification of Pre-mRNA: The 2'-Hydroxyl Groups at the Splice Sites," <i>Science</i> 256:992-996 (1992)
81	Nathans and Smith, "Restriction Endonucleases in the Analysis and Restructuring of DNA Molecules," <i>Ann. Rev. Biochem.</i> 44:273-293 (1975)
82	Noonberg et al., "In vivo generation of highly abundant sequence-specific oligonucleotides for antisense and triplex gene regulation," <i>Nucleic Acids Research</i> 22(14):2830-2836 (1994)
83	Ohkawa et al., "Activities of HIV-RNA Targeted Ribozymes Transcribed From a 'Shot-Gun' Type Ribozyme-trimming Plasmid," <i>Nucleic Acids Symp. Ser.</i> 27:15-16 (1992)
84	Ojwang et al., "Inhibition of Human Immunodeficiency Virus Type 1 Expression by a Hairpin Ribozyme," <i>Proc. Natl. Acad. Sci. USA</i> 89:10802-10806 (1992)
85	Oku et al., "Real-time analysis of liposomal trafficking in tumor-bearing mice by use of positron emission tomography," <i>Biochimica et Biophysica Acta</i> 1238:86-90 (1995)
86	Ono et al., "DNA Triplex Formation of Oligonucleotide Analogues Consisting of Linker Groups and Octamer Segments That Have Opposite Sugar-Phosphate Backbone Polarities," <i>Biochemistry</i> 30:9914-9921 (1991)
87	Orgel, "Selection <i>in vitro</i> ," <i>Proc. R. Soc. London B.</i> 205:435-442 (1979)
88	Pan et al., "Properties of an <i>In Vitro</i> Selected Pb ²⁺ Cleavage Motif," <i>Biochemistry</i> 33:9561-9565 (1994)
89	Perreault et al., "Mixed Deoxyribo- and Ribo-Oligonucleotides with Catalytic Activity," <i>Nature</i> 344:565-567 (1990) (often mistakenly listed as Perrault)
90	Pieken et al., "Kinetic Characterization of Ribonuclease-Resistant 2'-Modified Hammerhead Ribozymes," <i>Science</i> 253:314-317 (1991)
91	Richardson and Schepartz, "Tethered Oligonucleotide Probes. A Strategy for the Recognition of Structured RNA," <i>J. Am. Chem. Soc.</i> 113:5109-5111 (1991)

92	Rossi et al., <i>Science</i> , 285, 1685, 1999
93	Ruffner et al., "Sequence Requirements of the Hammerhead RNA Self-Cleavage Reaction," <i>Biochemistry</i> 29:10695-10702 (1990)
94	Sarver et al., "Ribozymes as Potential Anti-HIV-1 Therapeutic Agents" <i>Science</i> 247:1222-1225 (1990)
95	Scanlon et al., "Ribozyme-Mediated Cleavage of c-fos mRNA Reduces Gene Expression of DNA Synthesis Enzymes and Metallothionein," <i>Proc. Natl. Acad. Sci. USA</i> 88:10591-10595 (1991)
96	Scaringe et al., "Chemical synthesis of biologically active oligoribonucleotides using β -cyanoethyl protected ribonucleoside phosphoramidites," <i>Nucl Acids Res.</i> 18:5433-5441 (1990)
97	Seela and Kaiser, "Oligodeoxyribonucleotides containing 1,3-propanediol as nucleoside substitute," <i>Nucleic Acids Research</i> 15:3113-3129 (1987)
98	Shabarova et al., "Chemical ligation of DNA: The first non-enzymatic assembly of a biologically active gene," <i>Nucleic Acids Research</i> 19:4247-4251 (1991)
99	Soukup and Breaker, "Relationship between internucleotide linkage geometry and the stability of RNA" 1999, <i>RNA</i> , 5, 1308-1325
100	Sugiyama et al., "Catalytic activities of hammerhead ribozymes with a triterpenoid linker instead of stem/loop II," <i>FEBS Letters</i> 392:215-219 (1996)
101	Sullenger and Cech, "Tethering Ribozymes to a Retroviral Packaging Signal for Destruction of Viral RNA," <i>Science</i> 262:1566-1569 (1993)
102	Szostak and Ellington, "Ch. 20 - In Vitro Selection of Functional RNA Sequences," in <i>The RNA World</i> , edited by Gesteland and Atkins, Cold Spring Harbor Laboratory Press, pp. 511-533 (1993)
103	Szostak, "In Vitro Genetics," <i>TIBS</i> 17:89-93 (1992)
104	Taira et al., "Construction of a novel RNA-transcript-trimming plasmid which can be used both <i>in vitro</i> in place of run-off and (G)-free transcriptions and <i>in vivo</i> as multi-sequences transcription vectors," <i>Nucleic Acids Research</i> 19:5125-5130 (1991)
105	Tang and Breaker, "Examination of the catalytic fitness of the hammerhead ribozyme by <i>in vitro</i> selection," <i>RNA</i> 3:914-925 (1997)
106	Thompson et al., "Improved accumulation and activity of ribozymes expressed from a tRNA-based RNA polymerase III promoter," <i>Nucleic Acids Research</i> 23:2259-2268 (1995)
107	Thomson et al., "In vitro selection of hammerhead ribozymes containing a bulged nucleotide in stem II," <i>Nucleic Acids Research</i> 24:4401-4406 (1996) (MAY BE REFERRED TO AS THOMPSON)
108	Turner et al., "Improved Parameters for Prediction of RNA Structure," <i>Cold Spring Harbor Symposia on Quantitative Biology Volume LII</i> , pp. 123-133 (1987)
109	Turner et al., "Free Energy Increments for Hydrogen Bonds in Nucleic Acid Base Pairs," <i>J. Am. Chem. Soc.</i> 109:3783-3785 (1987)
110	Usman and Cedergren, "Exploiting the chemical synthesis of RNA," <i>TIBS</i> 17:334-339 (1992)
111	Usman and McSwiggen, "Ch. 30 - Catalytic RNA (Ribozymes) as Drugs," <i>Annual Reports in Medicinal Chemistry</i> 30:285-294 (1995)
112	Usman et al., "Automated Chemical Synthesis of Long Oligoribonucleotides Using 2'-O-Silylated Ribonucleoside 3'-O-Phosphoramidites on a Controlled-Pore Glass Support: Synthesis of a 43-Nucleotide Sequence Similar to the 3'-Half Molecule of an <i>Escherichia coli</i> Formylmethionine tRNA," <i>J. Am. Chem. Soc.</i> 109:7845-7854 (1987)
113	Usman et al., "Chemical modification of hammerhead ribozymes: activity and nuclease resistance," <i>Nucleic Acids Symposium Series</i> 31:163-164 (1994)
114	Vaish et al., "In vitro selection of a purine nucleotide-specific hammerhead-like ribozyme," <i>Proc. Natl. Acad. Sci. USA</i> 95:2158-2162 (1998)
115	Ventura et al., "Activation of HIV-Specific Ribozyme Activity by Self-Cleavage," <i>Nucleic Acids Research</i> 21:3249-3255 (1993)
116	Weerasinghe et al., "Resistance to Human Immunodeficiency Virus Type 1 (HIV-1) Infection in Human CD4 ⁺ Lymphocyte-Derived Cell Lines Conferred by Using Retroviral Vectors Expressing an HIV-1 RNA-Specific Ribozyme," <i>Journal of Virology</i> 65:5531-5534 (1994)
117	Wincott et al., "Synthesis, deprotection, analysis and purification of RNA and ribozymes," <i>Nucleic Acids Research</i> 23(14):2677-2684 (1995)

118	Wincott et al., "A Practical Method for the Production of RNA and Ribozymes," <u>Methods in Molecular Biology</u> 74:59-69 (1997)
119	Yu et al., "A Hairpin Ribozyme Inhibits Expression of Diverse Strains of Human Immunodeficiency Virus Type 1," <u>Proc. Natl. Acad. Sci. USA</u> 90:6340-6344 (1993)
120	Zaug et al., "The <i>Tetrahymena</i> Ribozyme Acts Like an RNA Restriction Endonuclease," <u>Nature</u> 324:429-433 (1986)
121	Zhou et al., "Synthesis of Functional mRNA in Mammalian Cells by Bacteriophage T3 RNA Polymerase," <u>Mol. Cell. Biol.</u> , 10:4529-4537 (1990)
122	Zuker, "On Finding All Suboptimal Foldings of an RNA Molecule," <u>Science</u> 244:48-52 (1989)

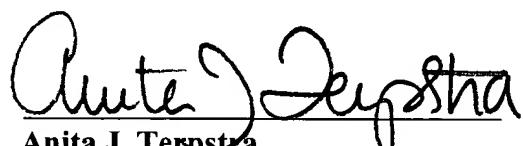
In accordance with MPEP Sections 609 and 707.05(b), it is requested the document cited (including any cited in applicant's specification which is not repeated on the attached Form PTO-1449) be given thorough consideration and that it be cited of record in the prosecution history of the present application by initialing on Form PTO-1449. Such initialing is requested even if the Examiner does not consider a cited document to be sufficiently pertinent to use in a rejection, or otherwise does not consider it to be prior art for any reason, or even if the Examiner does not believe that the guidelines for citation have been fully complied with. This is requested so that each document becomes listed on the face of the patent issuing on the present application.

Respectfully submitted,

McDonnell Boehnen Hulbert & Berghoff

Date: January 24, 2002

By:



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
(Case No. MBHB00,884-H; 500.001)

PATENT
FEB 08 2002
TECH CENTER 1600/2900
RECEIVED

Application of:)
Breaker, et al.) Before the Examiner:
Serial No. 09/780,929) Group Art Unit: 1645
Filed: February 8, 2001)
For: NUCLEIC ACID CATALYSTS WITH)
ENDONUCLEASE ACTIVITY)

Sir:

TRANSMITTAL LETTER

In regard to the above identified application:

1. We are transmitting herewith the attached papers for the above identified new patent application:

- Information Disclosure Statement;
- Information Disclosure Statement (IDS) PTO-1449 Form;
- Copies of IDS Citations for S/N 09/780,929 (Total 3 patents, 14 foreign patents and 105 other documents); and
- Return Receipt Postcard.

2. With respect to additional fees:

- No additional fee is required.

3. GENERAL AUTHORIZATION: Please charge any additional fees or credit overpayment to Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.

4. CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on January 24, 2002.

By :

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